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*VULCAN

DEPOSITORY

This training circular was written by the U.S. Army Air Defense School, Fort Bliss, TX, and published by the U.S. Army Combat Arms Training Board, Fort Benning, GA. The information conforms as closely as possible with approved Department of the Army doctrine and is intended to complement existing training literature.

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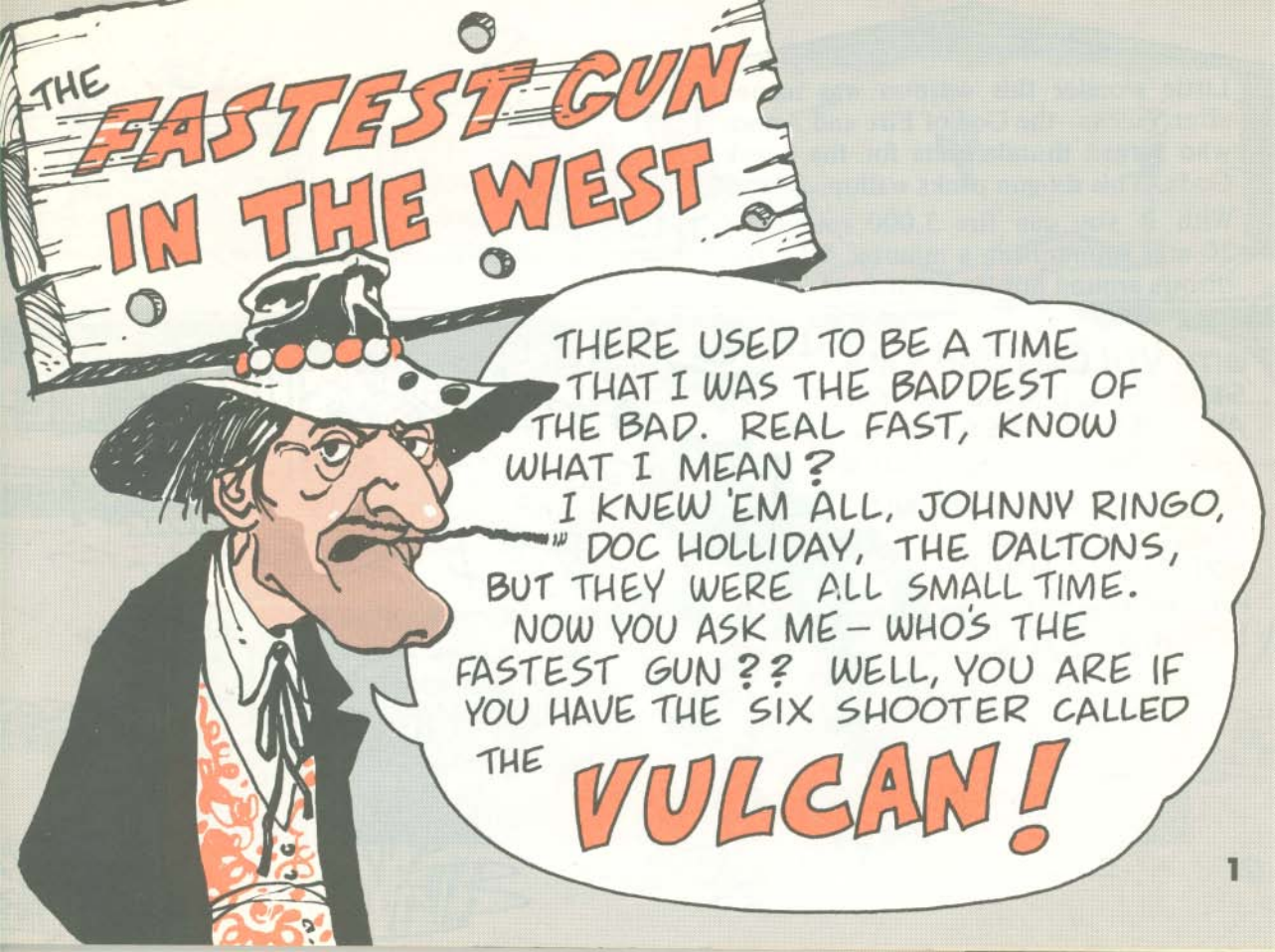
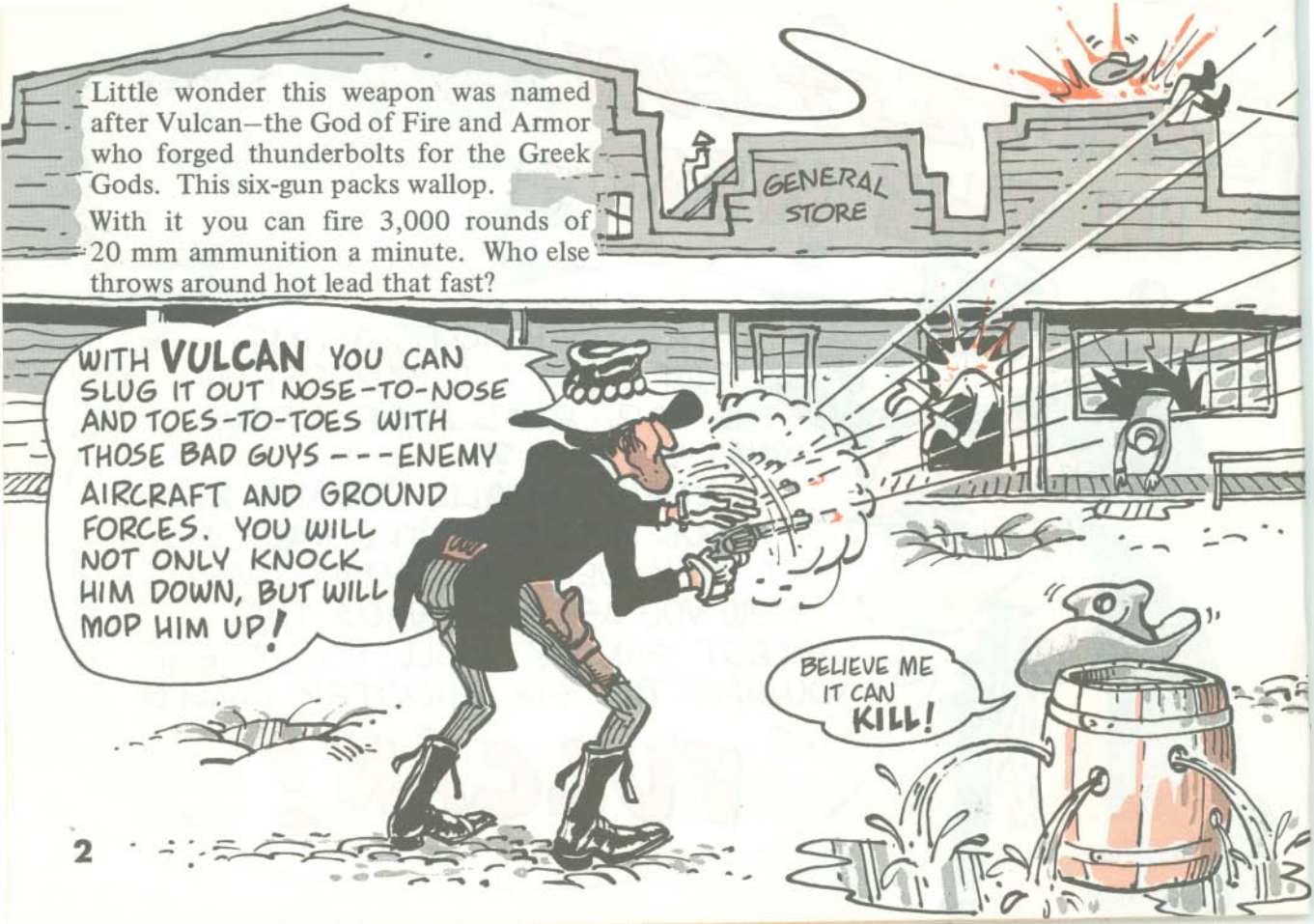
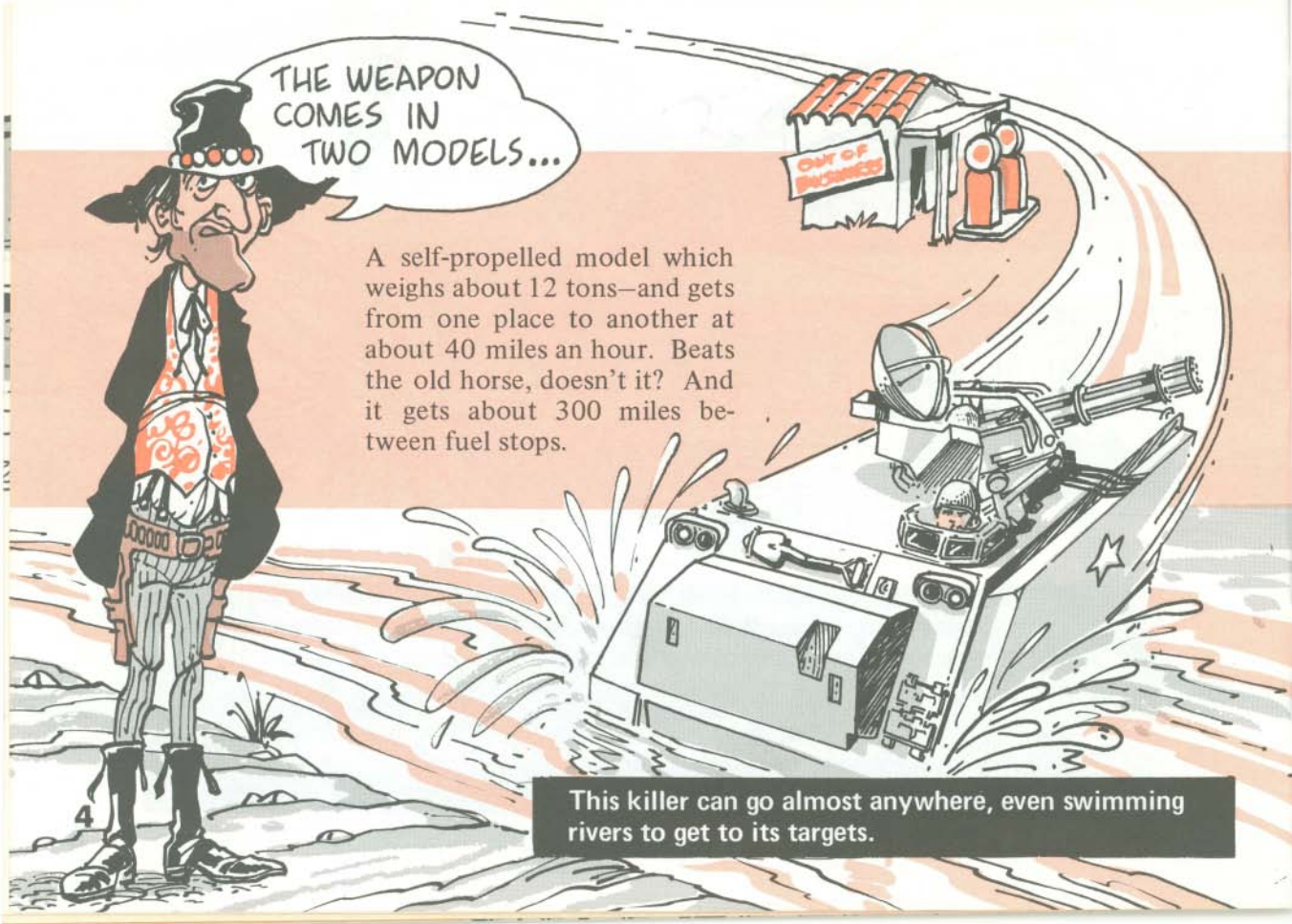

THE FASTEST GUN IN THE WEST
THERE USED TO BE A TIME THAT I WAS THE BADDEST OF THE BAD. REAL FAST, KNOW WHAT I MEAN?
I KNEW 'EM ALL, JOHNNY RINGO, DOC HOLLIDAY, THE DALTONS, BUT THEY WERE ALL SMALL TIME.
NOW YOU ASK ME – WHO'S THE FASTEST GUN?? WELL, YOU ARE IF YOU HAVE THE SIX SHOOTER CALLED THE VULCAN!


Little wonder this weapon was named after Vulcan—the God of Fire and Armor who forged thunderbolts for the Greek Gods. This six-gun packs wallop.
With it you can fire 3,000 rounds of 20 mm ammunition a minute. Who else throws around hot lead that fast?
GENERAL STORE
WITH VULCAN YOU CAN SLUG IT OUT NOSE-TO-NOSE AND TOES-TO-TOES WITH THOSE BAD GUYS - - - ENEMY AIRCRAFT AND GROUND FORCES. YOU WILL NOT ONLY KNOCK HIM DOWN, BUT WILL MOP HIM UP!
BELIEVE ME IT CAN KILL!

This automatic weapons system was designed to fill the holes in the low altitude air defense curtain. Enemy planes were able in the past to fly through the ack-ack holes because there simply wasn't enough lead flying around.

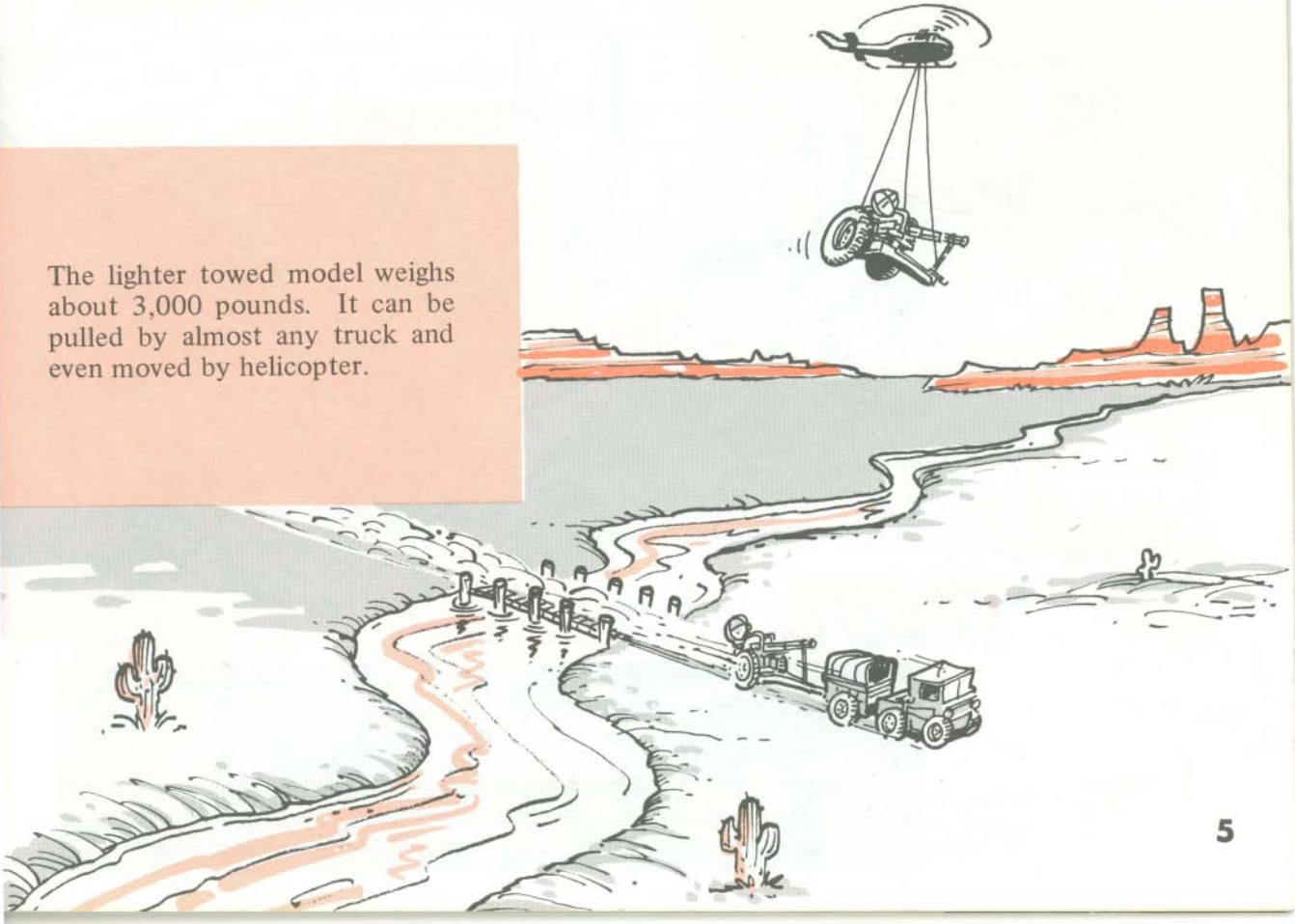
Now, when you pump out 3,000 rounds a minute, you pretty well close the holes.



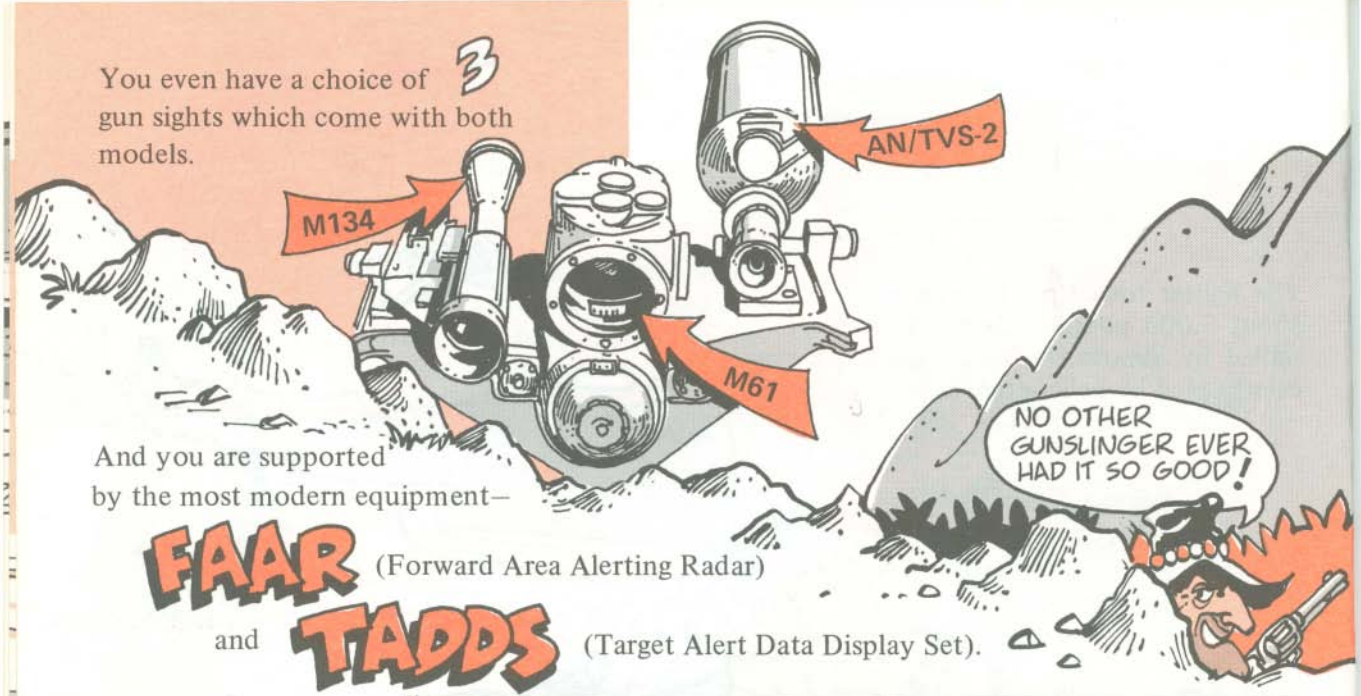
A self-propelled model which weighs about 12 tons—and gets from one place to another at about 40 miles an hour. Beats the old horse, doesn't it? And it gets about 300 miles between fuel stops.

This killer can go almost anywhere, even swimming rivers to get to its targets.

The lighter towed model weighs about 3,000 pounds. It can be pulled by almost any truck and even moved by helicopter.



You even have a choice of 3 gun sights which come with both models.



And you are supported by the most modern equipment–

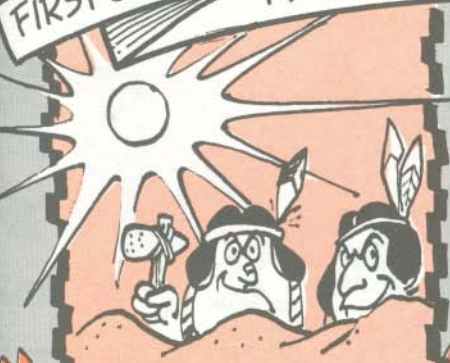
FAAR (Forward Area Alerting Radar)

and **TADDS** (Target Alert Data Display Set).

While these weapons give you the ability to fill the air with lead, they are only as good as the man who fires them—you.

Vulcan can kill—if you use it properly. If you don't you are either filling the air full of hot lead and missing or shooting down a pardner. So, do it as we're about to show you.

FIRST OF ALL PLACE YOURSELF IN THE BEST POSITION



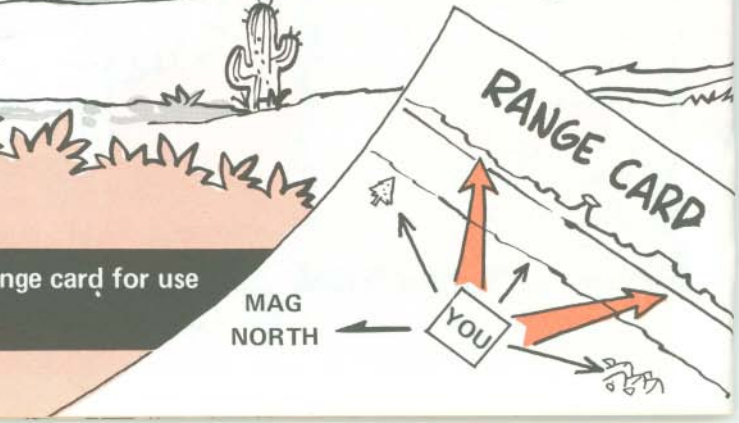
Remember how the Indians liked to attack at dawn when the sun was in the eyes of their enemy?

Well, you can't afford to be caught in the wrong position either!

Remember to consider such things as a good field of fire, alternate positions, a load of ammo, commo and naturally your camouflage.

As time permits, orient your TADDS, boresight old Vulc and be sure your switch settings and ballistics card position are correct. And, don't forget the fire interrupter settings for the towed model.

Get into position **PRONTO.** You never know when the bad guys are going to attack. In fact, have someone standing watch while you're getting ready. And, always continue to improve your position.



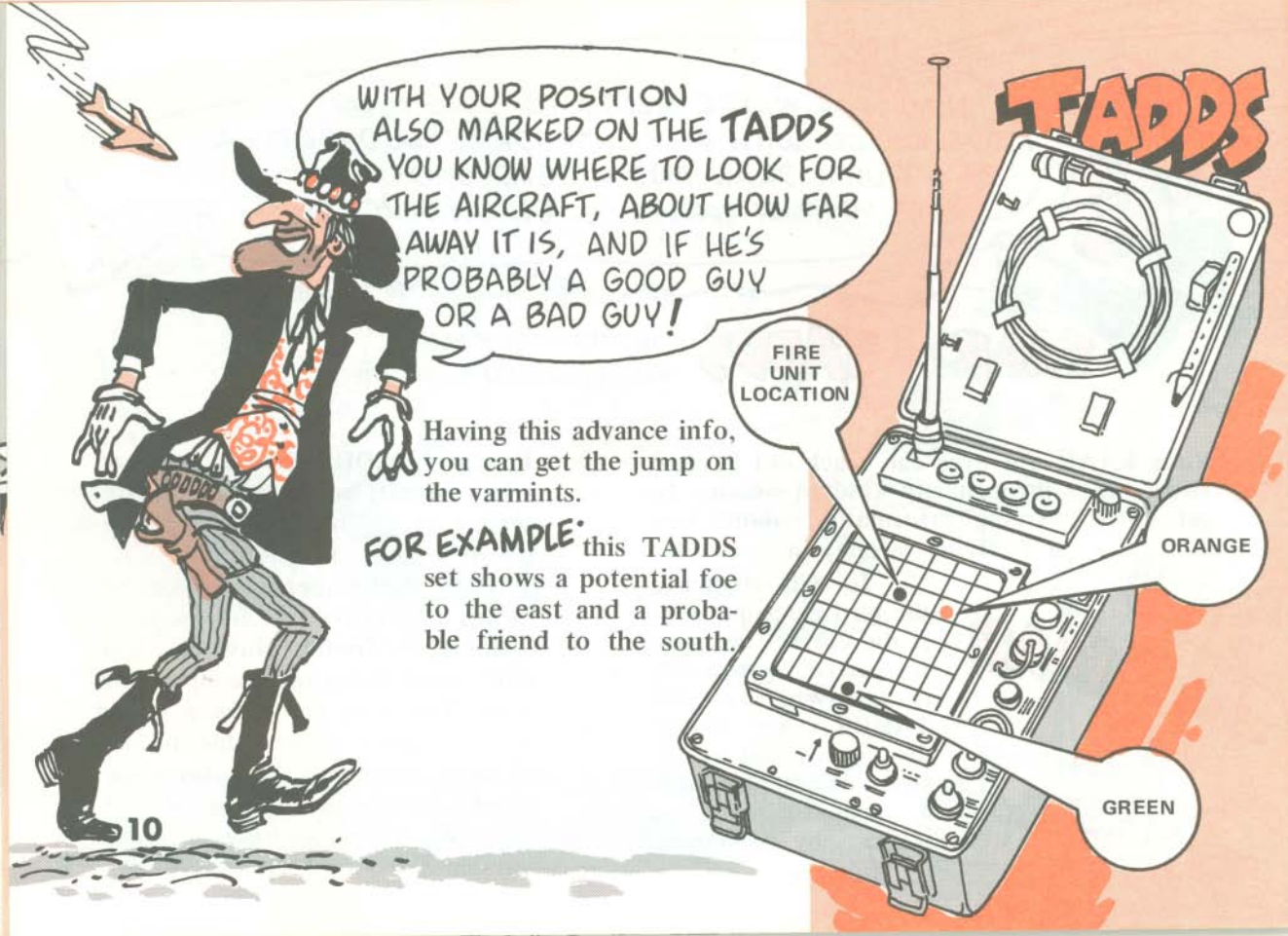
Once in position, make a handy range card for use against ground targets.

FAAR and **TADDS** will help make sure you don't get caught by surprise.

Your FAAR out eyes can reach out beyond visual range through any kind of weather to get early warning information about low flying aircraft in your area.

It will challenge the bird electronically. If the correct response is received, a green disc is shown on the TADDS. An orange disc means that no answer or an incorrect response was given by the target.

Reading TADDS is no problem. When aircraft are in the air nearby, orange or green colored discs pinpoint their positions on the TADDS. Remember the orange disc means a tentative foe and the green a tentative friend. However, you don't start firing or ease up at this time. The plan could be a friend who couldn't answer due to mechanical problems. Wait for visual identifications, and the squad leader's OK, before starting to pump out death.



Having this advance info, you can get the jump on the varmints.

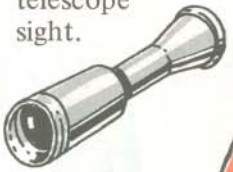
FOR EXAMPLE: this TADDS set shows a potential foe to the east and a probable friend to the south.

NOW that you know how to use FAAR and TADDS to find your victim, you need to know how to shoot him down. That's where your three sights come into play.

By choosing the best sight for the job, you stack the deck in your favor.

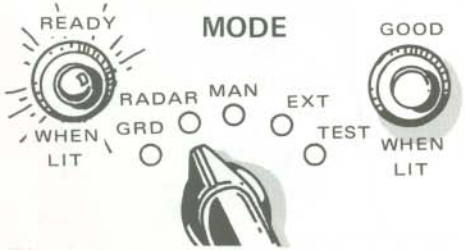
For instance, use the M61 lead computing sight for all aerial targets. The M61 can also be used for ground targets, but...

you can improve your winning hand by using the M134 telescope sight.



At night use your AN/TVS-2 (night vision sight) for ground targets and you'll kill him every time.

WHILE there are **4** firing modes of operation, you should use the radar mode on aerial targets. It is your best bet for a kill. However, if your radar is being jammed—the ready-to-fire light blinks—or is inoperative, use the manual or external modes.

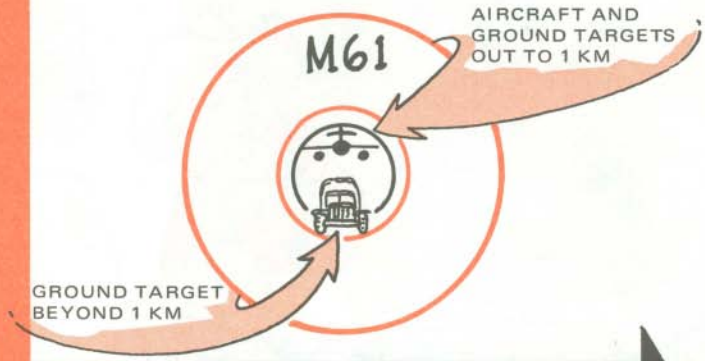


The big plus in using the radar, external or manual modes is you've got those electrons in the sight current generator helping you zero in on the target—provided the sight is uncaged.

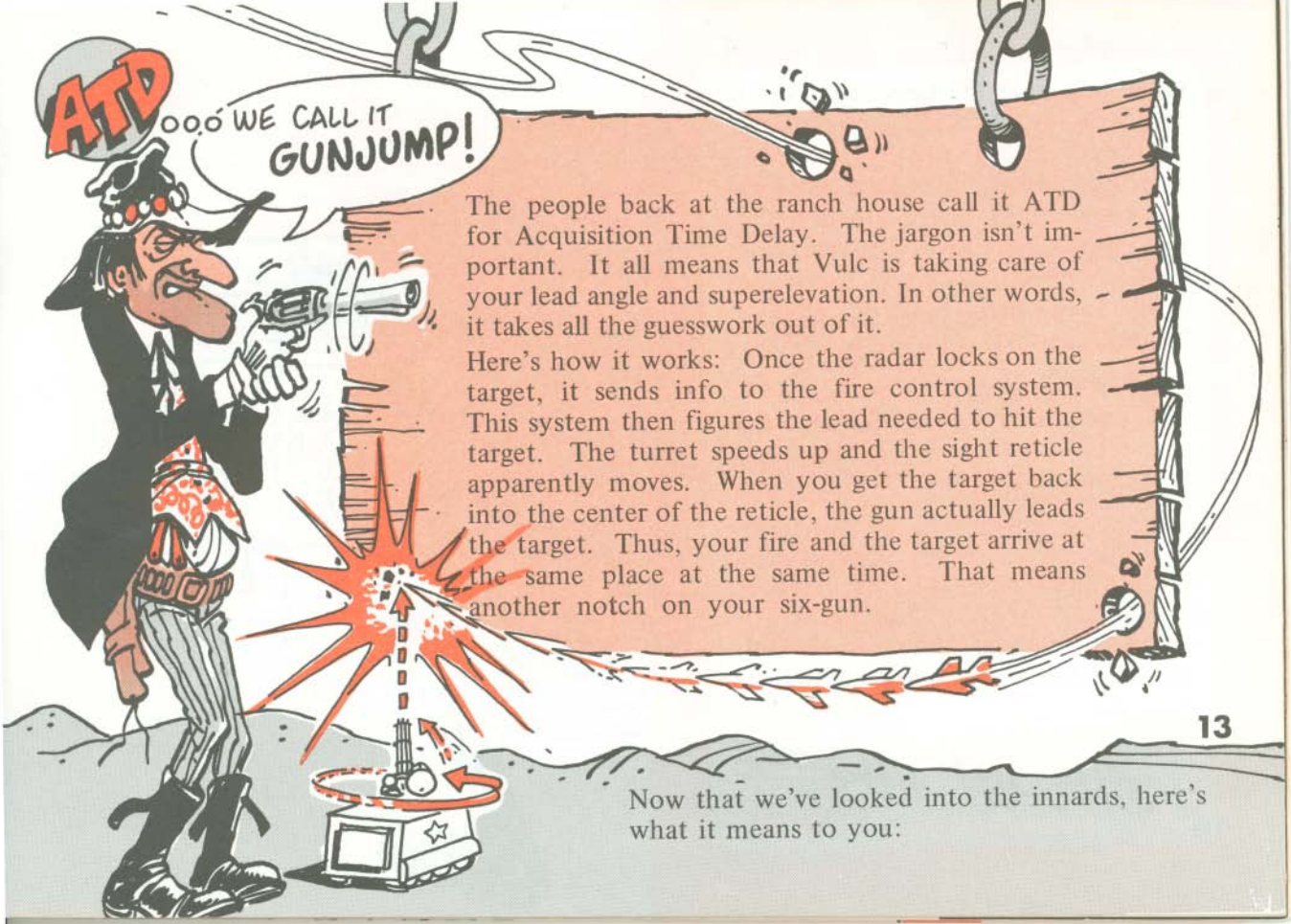
Let's discuss each of those sights and their use.

FIRST THE M61 Use the center of the inner reticle for aiming at all aircraft and for ground targets at ranges no further than one kilometer. The sight must be manually caged for ground targets.

Use the gap at the bottom of the inner reticle for aiming at long range ground targets.



The M61 tends to be ornery in the radar mode when you depress the radar radiate switch. The reticle tends to move and the turret speeds up momentarily. Don't worry, that's normal and even has a name—ATD.



The people back at the ranch house call it ATD for Acquisition Time Delay. The jargon isn't important. It all means that Vulc is taking care of your lead angle and superelevation. In other words, it takes all the guesswork out of it.

Here's how it works: Once the radar locks on the target, it sends info to the fire control system. This system then figures the lead needed to hit the target. The turret speeds up and the sight reticle apparently moves. When you get the target back into the center of the reticle, the gun actually leads the target. Thus, your fire and the target arrive at the same place at the same time. That means another notch on your six-gun.

Now that we've looked into the innards, here's what it means to you:

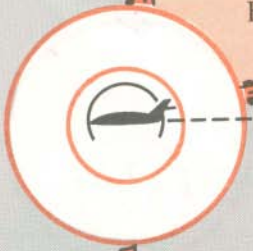
Once you have the target centered in the sight reticle..... and are satisfied you are tracking smoothly—don't change your hand control positions as you press the foot radiate switch. Freeze your hand controls until your ready to fire light comes on. That means ATD is finished.

After ATD, your job is to get the target smoothly back in the center of the reticle and maintain a smooth track for a few seconds.

When you have him there and have a ready-to-fire signal, he's a bandit living on borrowed time. But don't fire yet. Remember, the squad leader must give the order to turn Vulc loose. Then you can bring smoke and add him to your list.

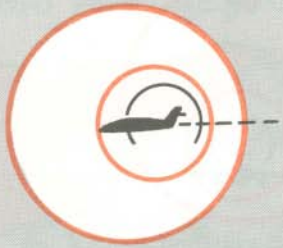
The key to holding gunjump to the least movement is to track smoother before ATD. This will make it easier to get the target back in the center of the reticle after ATD.

Here are some sight pictures you can expect to find:



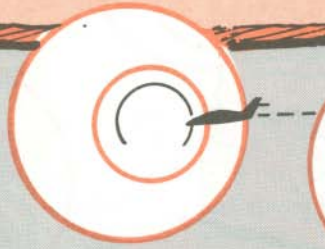
1

When the target is flying a crossing course, you've got to get this picture first. Then track him smoothly before putting your sidekick, the radar, to work. Freeze those controls as you press the foot radiate switch. Now ATD happens and your sight reticle shows you where to track the target for the kill.



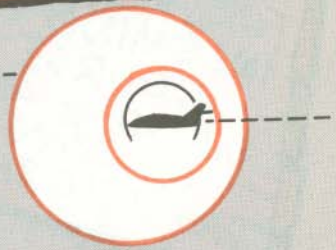
2

If your tracking was too slow before ATD, or you decrease tracking rate with the azimuth hand control during ATD, this is the picture you'll get.



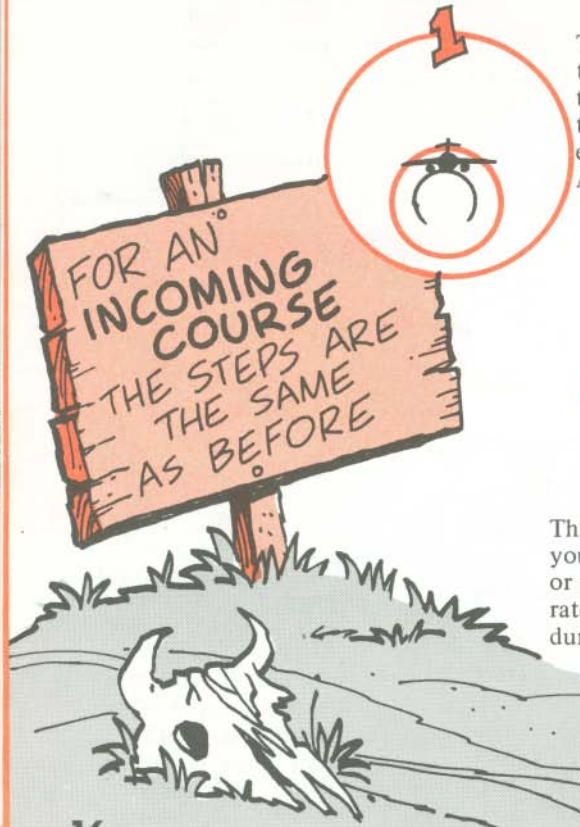
3

If your tracking was too fast, or you increase tracking rate with the azimuth hand control during ATD, this is the picture you'll see.



4

So, if you didn't get this picture after ATD, your tracking wasn't perfect. So, get the target back in the center of the reticle. Then hold that smooth track again for a couple of seconds. He's ready for the kill—when you get the squad leader's OK.

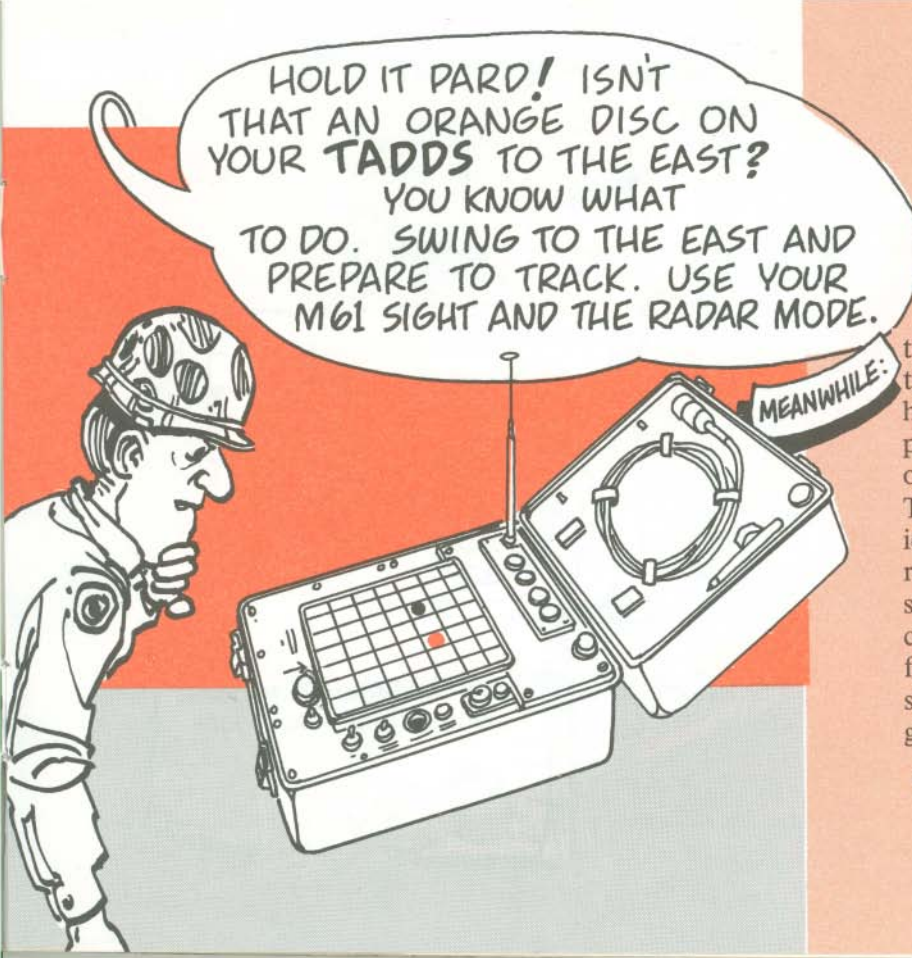


This is the picture if your tracking before ATD was too slow or you decreased tracking rate with your elevation control during ATD.

This is what you find if your tracking was too fast or you increased tracking rate with your elevation during ATD.

This is what you should see if your tracking was perfect. If you don't have this picture, correct your tracking until you get the target in the center of the reticle.

There are probably a million or more possible sight pictures. But all you need to do is get the target in the center of the reticle. The position of the reticle in the field of view is not important.

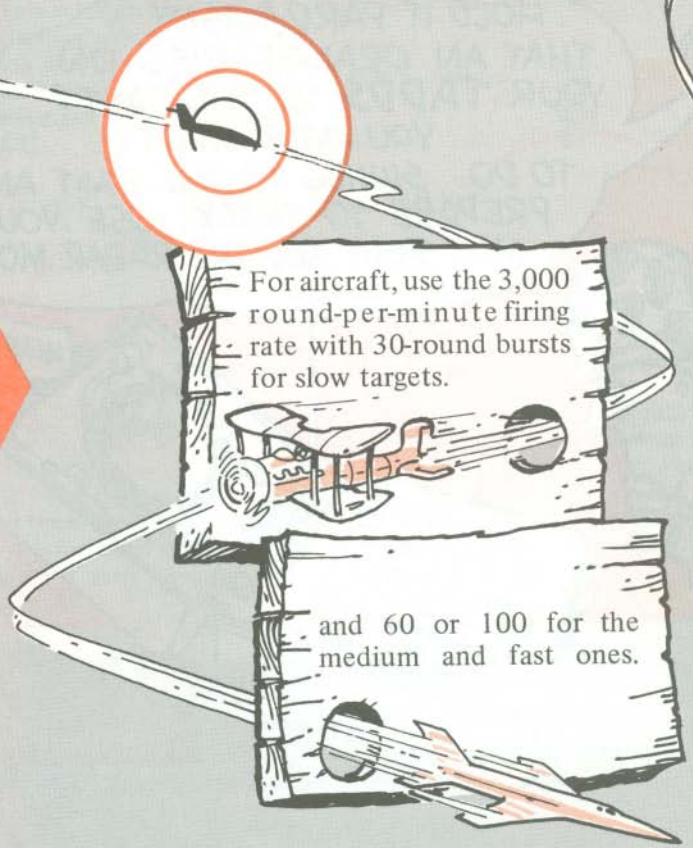


the squad leader is looking for the target. Once he sees it, he'll put his binoculars on it for positive identification—friend or foe.

To determine the aircraft's identity, he uses his aircraft recognition training and considers the tactical SOP which covers airspace control, air defense warnings, hostile acts, state of alert and rules of engagement.

THEN HE MAKES HIS DECISION!

Your squad leader just gave the positive hostile identification. You are ready to let loose with smoke because you tracked him, put the radar to work and have him back in the center of the reticle. Now for the action.



Since this is a fast aircraft, you have selected the 60 or 100-round burst and used the radar mode. The ready-when-lit light is lit.

NOW ZAP HIM WITH THE LEAD!

HOW MANY BANDITS DOES THAT MAKE?

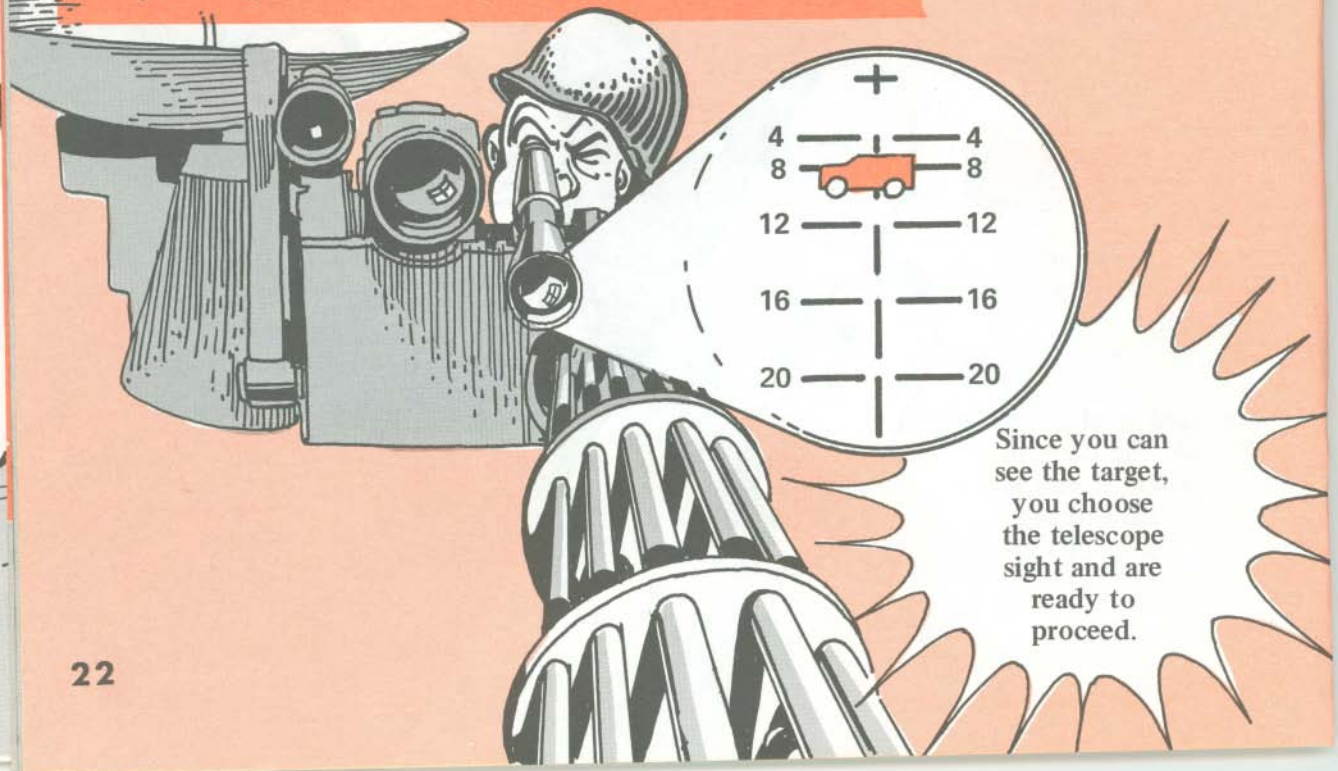
Wrap your six-gun barrels in the ground clamp, load with high explosive point detonating ammo (M56A3), put Vulc in the ground mode and set the firing rate switch. If you had selected the M61, you must cage the sight.

In selecting the burst rate, remember that 10 or 30 round bursts are best for ground targets. You can use the 1,000 or 3,000 round-per-minute rate.

While you can use any of the three sights for the ground work, why not stack the deck in your favor. Use the telescope sight or the AN/TVS-2 (night vision).

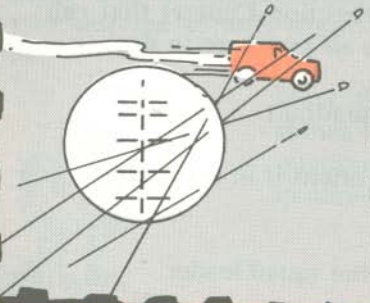
Use the night sight only after the sun's gone down.

Here are the pictures you have on your telescope and night vision sights. Sight along the broken lines and at the estimated range in hundreds of meters. In this case, the target is a truck at approximately 800 meters. If he's near a terrain feature on your range card, it can help you.



NOW YOU'RE READY TO CLOBBER SOME MORE OUTLAWS!

Get the target on the right spot in the sight and pump out a few rounds. If you're on target, fire for effect. If not, make corrections and then fire for effect.



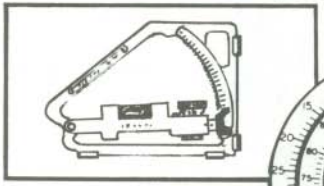
WHAT A DAY!!

You started by getting an aircraft and now a truck. What's next? Well, now you've got one more test to see how good you really are. Now we'll separate the super shooters from the amateurs.

You can clobber the enemy with indirect fire if you have some help from a friend—an observer who can see the target or an FDC (Fire Direction Center) that can feed you gun firing data. Here's all you have to do:

- Get out the gunner's quadrant.
- Level the cannon and orient it in azimuth to a known point.
- Take directions from the squad leader.

The squad leader will give you the cannon pointing information like azimuth and quadrant elevation. This lets you put the rounds where they should be.



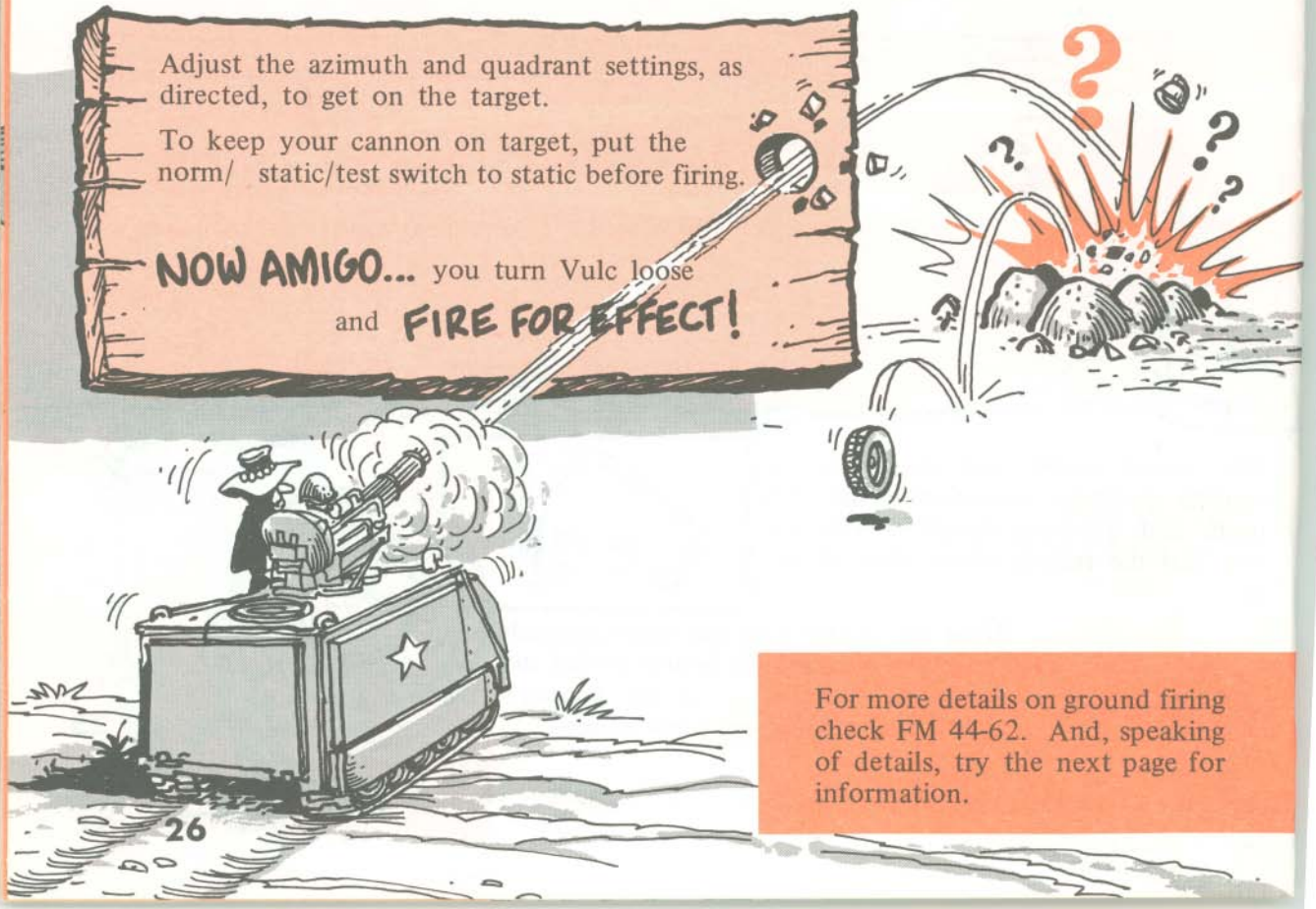
Move the mount until the target azimuth shows on the azimuth indicator. Set the quadrant elevation using the gunner's quadrant and pump out a few rounds.

MORE

Adjust the azimuth and quadrant settings, as directed, to get on the target.

To keep your cannon on target, put the norm/ static/test switch to static before firing.

NOW AMIGO... you turn Vulc loose and **FIRE FOR EFFECT!**



For more details on ground firing check FM 44-62. And, speaking of details, try the next page for information.

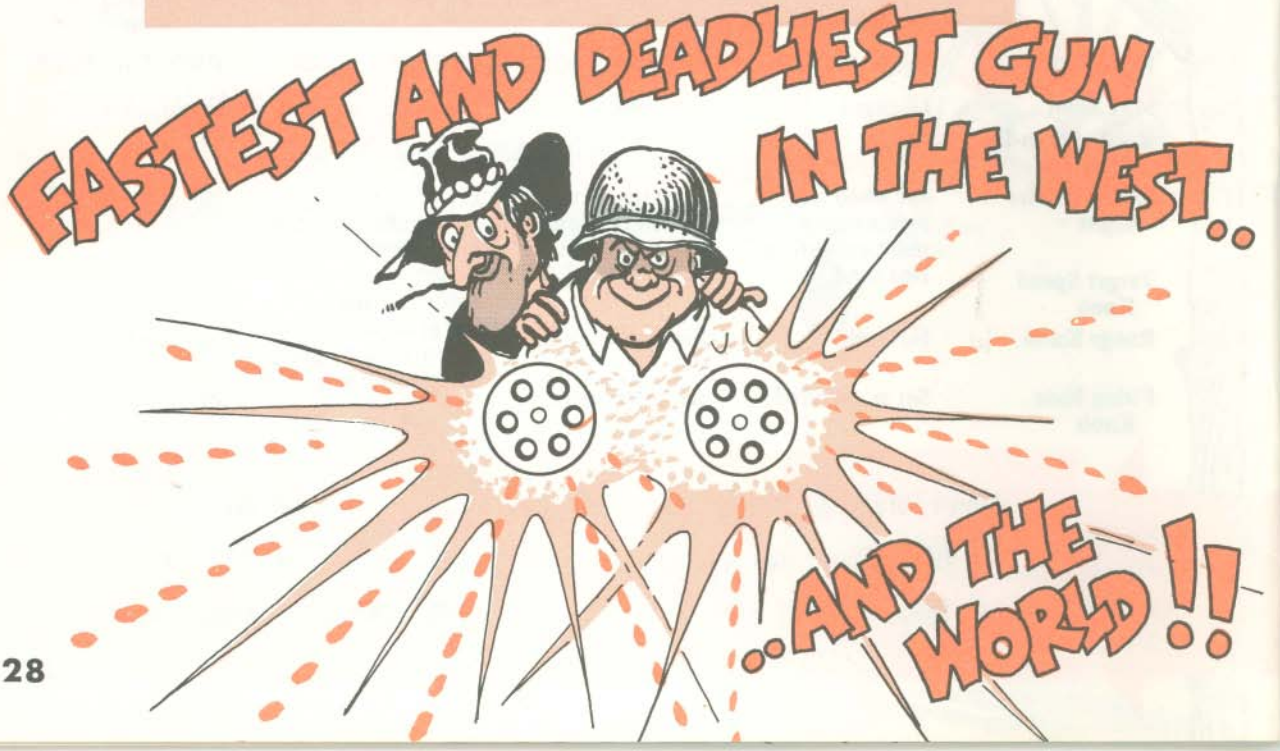
SOME IMPORTANT CONDITIONS TO KNOW

EQUIPMENT	RADAR MODE	MANUAL MODE	EXTERNAL MODE	GROUND MODE
M61 Sight	Uncaged.	Uncaged.	Uncaged.	Caged.
Ready-When-Lit Light	Lit.	Lit.	Off.	Off.
Ready-to-Fire Light	Lit when target meets engagement conditions.	Lit when action switch pressed.	Lit when external range unit operator pressed switch.	Not used.
Target Speed Knob	Not used.	Set as required.	Target speed set automatically.	Not used.
Range Knob	Not used.	Set as required.	Set as required on external range unit.	Not used.
Firing Rate Knob	Set as required.	Set as required.	Set as required.	Set as required.

Don't forget—you must have these 4 GO's to fire on aerial targets:

- Right sight picture
- Ready-to-fire light
- Smooth track
- OK from the squad leader

WELL SOLDIER... Now you're ready to tackle anything that comes your way—in the air and on the ground. You can't miss—as long as you use your weapon properly. Apply what you have just read, and **YOU** will be the. . . . . .



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